

Amendments to the Claims:

The listing of claims will replace all prior versions, and listings, of claims in the application.

Claims Listing

1. (currently amended) A method for inducing melanogenesis in a human subject having ~~an~~ a melanocortin 1 receptors (MC1R) MC1R variant allele associated with loss of or diminished receptor function, which comprises the ~~steps~~ step of administering to said subject an amount of ~~an α -MSH analogue~~ [Nle⁴, DPhe⁷]- α -melanocyte stimulating hormone ([Nle⁴, DPhe⁷]- α MSH) effective to induce melanogenesis by the melanocytes in the skin or other epidermal tissue of the subject; wherein the MC1R variant is identified using primer sequences selected from 5'-tggacaggactatggctgtg-3' (MC1R-1F – SEQ ID NO:1), 5'-tcttcagcacgctcttcat-3' (MC1R-1R – SEQ ID NO: 2), 5'-cttctacgcactgcgctacc-3' (MC1R-2F – SEQ ID NO: 3) and 5'-gctttaagtgtgctgggcag-3' (MC1R-2R – SEQ ID NO: 4).

2. (currently amended) The method of claim 1, wherein an admixture of said α -MSH analogue with a further α -MSH analogue is administered in an amount effective to induce said melanogenesis, wherein said further α -MSH analogue is selected from:

(a) compounds of the formula:

Ac-Ser-Tyr-Ser-M-Gln-His-D-Phe-Arg-Trp-Gly-Lys-Pro-Val-NH₂

wherein M is Met, Nle or Lys; and

(b) compounds of the formula:

R₁-W-X-Y-Z-R₂

wherein

R₁ is Ac-Gly-, Ac-Met-Glu, Ac-Nle-Glu-, or Ac-Tyr-Glu-;

W is -His- or -D-His-;

X is -Phe-, -D-Phe-, -Tyr-, -D-Tyr-, or -(pNO₂)D-Phe⁷-;

Y is -Arg- or -D-Arg-;

Z is -Trp- or -D-Trp-; and

R₂ is -NH₂; -Gly-NH₂; or -Gly-Lys-NH₂.

3. (withdrawn, currently amended) The method of claim 1, wherein the further α-MSH analogue is a cyclic analogue wherein an intramolecular interaction exists (1) between the amino acid residue at position 4 and an amino acid residue at position 10 or 11, and/or (2) between the amino acid residue at position 5 and the amino acid residue at position 10 or 11.

4. (withdrawn, original) The method of claim 3, wherein the intramolecular interaction is a disulfide bond or other covalent bond.

5. (currently amended) The method of claim 1, wherein the further α-MSH analogue is selected from the group consisting of:

Ac-Ser-Tyr-Ser-Nle-Glu-His-D-Phe-Arg-Trp-Lys-Gly-Pro-Val-NH₂

Ac-Ser-Tyr-Ser-Nle-Asp-His-D-Phe-Arg-Trp-Lys-Gly-Pro-Val-NH₂

Ac-Nle-Glu-His-D-Phe-Arg-Trp-Lys-Gly-Pro-Val-NH₂

Ac-Nle-Asp-His-D-Phe-Arg-Trp-Lys-Gly-Pro-Val-NH₂

Ac-Nle-Asp-His-D-Phe-Arg-Trp-Gly-NH₂

Ac-Nle-Glu-His-D-Phe-Arg-Trp-Lys-NH₂

Ac-Nle-Asp-His-D-Phe-Arg-Trp-Lys-NH₂

Ac-Nle-Glu-His-D-Phe-Arg-Trp-Orn-NH₂

Ac-Nle-Asp-His-D-Phe-Arg-Trp-Orn-NH₂

Ac-Nle-Glu-His-D-Phe-Arg-Trp-Dab-NH₂

Ac-Nle-Asp-His-D-Phe-Arg-Trp-Dab-NH₂

Ac-Nle-Glu-His-D-Phe-Arg-Trp-Dpr-NH₂

Ac-Nle-Glu-His-Phe-Arg-Trp-Lys-NH₂ (SEQ ID NO:5)


Ac-Nle-Asp-His-Phe-Arg-Trp-Lys-NH₂ (SEQ ID NO:6).

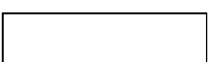
6. (withdrawn, currently amended) The method of claim 1, wherein the further α-MSH analogue is selected from the group consisting of:

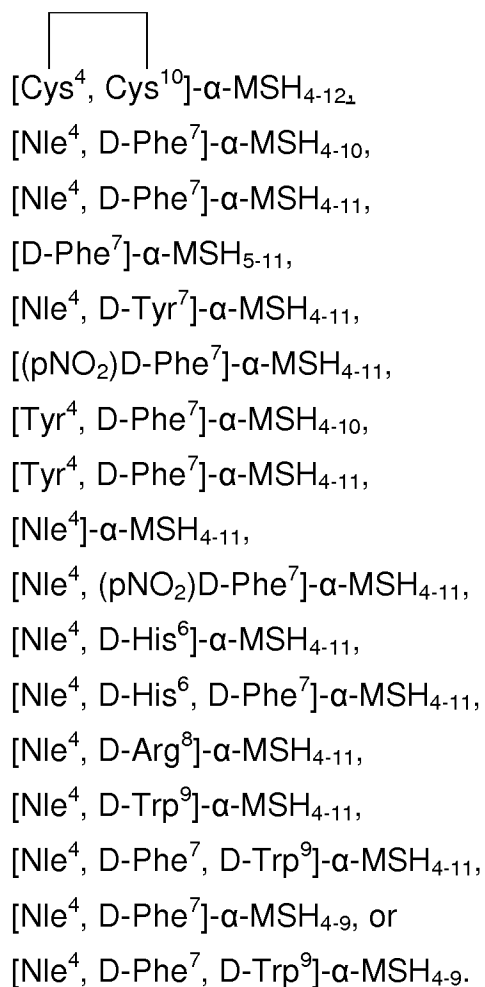
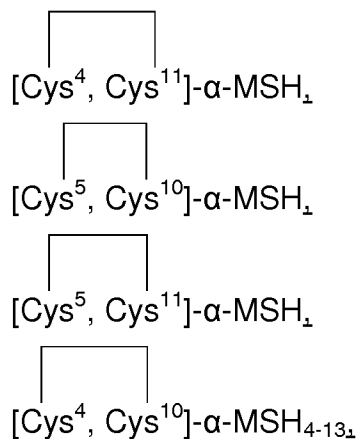


7. (currently amended) The method of claim 1, wherein the further α -MSH analogue is

[D-Phe⁷]- α -MSH,
[Nle⁴, D-Phe⁷]- α -MSH,
[D-Ser¹, D-Phe⁷]- α -MSH,
[D-Tyr², D-Phe⁷]- α -MSH,
[D-Ser³, D-Phe⁷]- α -MSH,
[D-Met⁴, D-Phe⁷]- α -MSH,
[D-Glu⁵, D-Phe⁷]- α -MSH,
[D-His⁶, D-Phe⁷]- α -MSH,
[D-Phe⁷, D-Arg⁸]- α -MSH,
[D-Phe⁷, D-Trp⁹]- α -MSH,
[D-Phe⁷, D-Lys¹¹]- α -MSH,
[D-Phe⁷, D-Pro¹²]- α -MSH,
[D-Phe⁷, D-Val¹³]- α -MSH,
[D-Ser¹, Nle⁴, D-Phe⁷]- α -MSH,
[D-Tyr², Nle⁴, D-Phe⁷]- α -MSH,
[D-Ser³, Nle⁴, D-Phe⁷]- α -MSH,
[Nle⁴, D-Glu⁵, D-Phe⁷]- α -MSH,
[Nle⁴, D-His⁶, D-Phe⁷]- α -MSH,
[Nle⁴, D-Phe⁷, D-Arg⁸]- α -MSH,
[Nle⁴, D-Phe⁷, D-Trp⁹]- α -MSH,
[Nle⁴, D-Phe⁷, ~~D-Lys¹¹~~ D-Lys¹¹]- α -MSH,
[Nle⁴, D-Phe⁷, D-Pro¹²]- α -MSH,
[Nle⁴, D-Phe⁷, D-Val¹³]- α -MSH,


[Cys⁴, Cys¹⁰]- α -MSH₁


[Cys⁴, D-Phe⁷, Cys¹⁰]- α -MSH₁



8. (currently amended) The method of claim 1, wherein the further α-MSH analogue is

[Nle⁴, D-Phe⁷]- α -MSH₄₋₁₀,
[Nle⁴, D-Phe⁷]- α -MSH₄₋₁₁,
[Nle⁴, D-Phe⁷], D-Trp⁹]- α -MSH₄₋₁₁, or
[Nle⁴, D-Phe⁷]- α -MSH₄₋₉.

9-11. (cancelled.)

12. (currently amended) A method according to claim 1 wherein the human subject has one or more variant alleles selected from the group consisting of Val60Leu (V60L), Asp84Glu (D84E), Val92Met (V92M), Arg142His (R142H), Arg 151Cys (R151C), Arg160Trp (R160W), and ~~Asp194His~~ Asp294His (D294H).

13. (currently amended) A method according to claim 1 wherein the human subject has two or more variant alleles selected from the group consisting of Val60Leu (V60L), Asp84Glu (D84E), Val92Met (V92M), Arg142His (R142H), Arg 151Cys (R151C), Arg160Trp (R160W), and ~~Asp194His~~ Asp294His (D294H).

14. (previously presented) A method according to claim 1 wherein the human subject has a Fitzpatrick skin type of I or II.

15. (cancelled)